

TO: Eric Sandin, GEF II, Geo/8

Groundwater Use Registry Buckslip

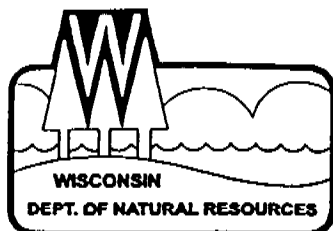
Site Name Todd's Conoco/Equity Coop
Address 2527 STH 35
Luck, WI
BRRTS # 03-49-000055
GPS Location: _____ latitude _____ longitude _____
Date of Closure Decision 5/12/00

Required

- ☒ Closure Letter
- ☐ Deeds for all properties with ES exceedance in Groundwater (RECORDED GWR)
- ☐ GPS location (latitude and longitude)
- ☒ Location map
- ☒ Detailed Site Map
- ☒ Groundwater Flow Direction Diagram including location of monitoring wells and all drinking water wells
- ☐ Latest Groundwater Plume Map with Groundwater Flow Direction
- ☒ Latest Table of Analytical Results for Groundwater

If Available, include the following:

- ☒ Metes and Bounds Legal Description
- ☒ Tax Parcel Number ON DEED # 36-683-0
- ☒ Geologic cross sections showing soil and groundwater contaminant source extent and location, isoconcentrations for all groundwater contaminants that exceed NR 140 enforcement standards, water table and piezometric elevations, and the extent, location and elevation of geologic units, bedrock, and confining units



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
William H. Smith, Regional Director

Northern Region Headquarters
107 Sutliff Ave.
Rhineland, Wisconsin 54501-0818
Telephone 715-365-8900
FAX 715-365-8932
TDD 715-365-8957

December 2, 1999

Mr. Larry Wojchik
Equity Coop
116 E Birch St
Amery, WI 54001

Subject: Todd's Conoco/ Equity Coop, 2527 STH 35, Luck, WI BRRTS # 03-49-000055

Dear Mr. Wojchik:

The Department of Natural Resources provided a notice to you that the degree and extent of unleaded gasoline contamination at the above-named site was required to be investigated and remediated. We have since been informed that the required investigation and remediation has been accomplished.

On November 30, 1999, the above-named site was reviewed by the Northern Region Closeout Committee for a determination as to whether or not the case qualified for close out under ch. NR 726, Wis. Adm. Code.

Based on the investigative and remedial documentation provided to the Department, it appears that the unleaded gasoline contamination at the above-named site has been remediated to the extent practicable under current site conditions, and that no further action is necessary at this time. Therefore, the Department will consider the case "closed," pursuant to NR 726.05(8)(am), if the responsible party sign and record a Groundwater Use Restriction for the property.

Enclosed is an example of a Groundwater Use Restriction. Please draft a specific Groundwater Use Restriction for this site and submit the draft to me. Department of Natural Resources attorneys will review the draft and return it to you with revisions. After you have made the revisions, you should sign and record the restriction with the County Register of Deeds. To document that this condition has been complied with, the responsible party must submit to the Department a copy of the recorded Groundwater Use Restriction, with the recording information stamped on it, within 15 days after the Register of Deeds returns the Groundwater Use Restriction to the responsible party. The Groundwater Use Restriction may be amended in the future with the approval of DNR if conditions change at the site and the residual contamination is remediated.

The groundwater use restriction is an option that the Department can offer to you in order to close this site. If you choose not to accept this option, you may perform additional investigation and cleanup of the remaining contamination. Note that this additional work may not be eligible for reimbursement through the Petroleum Environmental Cleanup Fund Award (PECFA) Program. You should contact the Department of Commerce to determine eligibility of the additional work for reimbursement.



*Quality Natural Resources Management
Through Excellent Customer Service*



Based on an evaluation of the close out form, it appears that soil contamination in excess of the generic residual contaminant levels (RCLs) contained in s. NR 720.09, Wis. Adm. Code, remain at this site. Per ch. NR 720, you have selected to use the asphalt pavement as a performance standard for a final remedy. The use of a soil performance standard requires publishing of a class 1 public notice per s. NR 714.07(5). You must therefore complete the public noticing of this remedial action before site closure can be approved under ch. NR 726. Enclosed are copies of public notices for your reference. In order to document your compliance with this requirement, you should submit tear sheets from the publisher of this notice to me at the above address.

Please note that this case closure is contingent upon proper documentation of proper abandonment of the monitoring wells on site. If monitoring wells remain at this site, please provide the documentation that this action has been completed, or have your consultant do so. Please complete Form 3300-5B and send it to my attention at the above address.

If you have any additional information which was not formerly provided to the Department, and which you feel would significantly impact this closure decision, you may submit that information for our re-evaluation of case closure.

If you have any questions, please call me at 715-365-8990.

Sincerely,
NORTHERN REGION



Janet Kazda
Case Closeout Committee

→ cc: File
Lori Huntoon, Dept of Commerce
Steve Karklins, DG/2
Chuck Fitzgerald, Rhinelander
Tom Kendzierski, Spooner

Gary Strand
Cooper Engineering Co, Inc
PO Box 230
Rice Lake, Wi 54868

597332

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Document Number | GROUNDWATER USE RESTRICTION

RECEIVED FOR RECORD

Declaration of Restrictions

A parcel of land in the Northeast corner of SE ¼ of SE ¼, Section 29-36-17 described as follows: Commencing at Northeast corner of SE ¼ of SE ¼ of Section 29-36-17, thence West 60 feet to place of beginning, thence South 208.5 feet, thence West 148.5 feet, thence North 208.5 feet, thence East 148.5 feet to place of beginning, intending hereby to convey also the following property: Part of the Southeast Quarter of the Southeast Quarter (SE ¼, SE ¼), Section 29, Township 36 North, Range 17 West, Town of Luck, Polk County, Wisconsin described as follows: Lot 1 of Certified Survey Map filed February 15, 1991 in Volume 7 Certified Survey Maps, page 4 as Document No. 483775.

STATE OF WISCONSIN)
) ss
COUNTY OF POLK)

APR 28 2000

AT 10:45 O'CLOCK A.M.
Bonnie Halberg, Register of Deeds
POLK COUNTY

Jonnie S. Halberg

Recording Area

Name and Return Address
Larry E. Wojcik
Equity Cooperative of Amery
319 Keller Avenue South
Amery WI 54001

36-683-0

Parcel Identification Number (PIN)

WHEREAS, Equity Cooperative of Amery is the owner of the above-described property.

WHEREAS, one or more petroleum discharges have occurred on this property. Benzene-contaminated groundwater above ch. NR 140 Wis. Adm. Code enforcement standards existed on this property at the following location on the following date:
Monitoring well 12 (MW12), 610 ppb, 5/11/99 (see attached site sketch, Exhibit A, with monitoring well locations indicated).

WHEREAS, it is the desire and intention of the property owner to impose on the property restrictions which will make it unnecessary to conduct further groundwater or soil remediation activities on the property at the present time.

WHEREAS, natural attenuation has been approved by the Department of Natural Resources to remediate groundwater contamination exceeding ch. NR 140 Wis. Adm. Code groundwater standards within the boundaries of this property.

WHEREAS, construction of wells where the water quality does not comply with drinking water standards in ch. NR 809 Wis. Adm. Code is restricted by ch. NR 811 and NR 812, Wis. Adm. Code. Special well construction standards or water treatment requirements, or both, or well construction prohibitions may apply.

NOW THEREFORE, the owner hereby declares that all of the property described above is held and shall be held, conveyed or encumbered, leased, rented, used, occupied and improved subject to the following limitation and restrictions:

Anyone who proposes to construct or reconstruct a well on this property is required to contact the Department of Natural Resources' Bureau of Drinking water and Groundwater, or its successor agency, to determine what specific requirements are applicable, prior to constructing or reconstructing a well on this property. No well may be constructed on this property unless applicable requirements are met.

If construction is proposed on this property that will require dewatering, or if groundwater is to be otherwise extracted from this property, while this groundwater use restriction is in effect, the groundwater shall be sampled and analyzed for contaminants that were previously detected on the property and any extracted groundwater shall be managed in compliance with applicable statutes and rules.

This restriction is hereby declared to be a covenant running with the land and shall be fully binding upon all persons acquiring the above-described property whether by descent, devise, purchase or otherwise. This restriction benefits and is enforceable by the Wisconsin Department of Natural Resources, its successors or assigns. The Department, its successors or assigns, may initiate proceedings at law or in equity against any person or persons who violate or are proposing to violate this covenant, to prevent the proposed violation or to recover damages for such violation.

Any person who is or becomes owner of the property described above may request that the Wisconsin Department of Natural Resources or its successor issue a determination that one or more of the restrictions set forth in the covenant is no longer required. Upon the receipt of such a request, the Wisconsin Department of Natural Resources shall determine whether or not the restrictions contained herein can be extinguished. If the Department determines that the restrictions can be extinguished, an affidavit, attached to a copy of the Department's written determination, may be recorded to give notice that this deed restriction, or portions of this deed restriction, are no longer binding.

By signing this document, Larry E. Wojcik asserts that he/she is duly authorized to sign this document on behalf of Equity Cooperative of Amery.

597332

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IN WITNESS WHEREOF, the owner of the property has executed this Declaration of Restrictions, this
24th day of April, 2000.

Signature: Larry E. Wojcik
Printed Name: Larry E. Wojcik

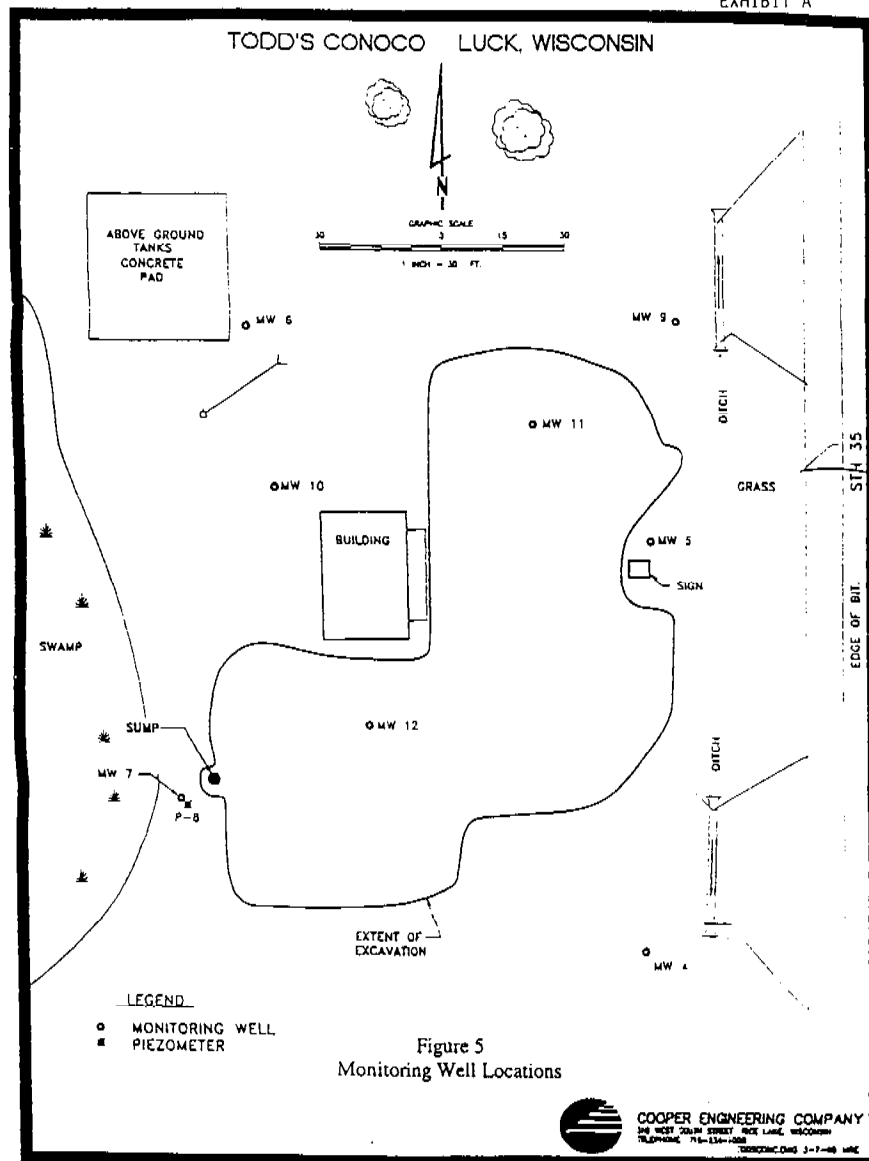
Subscribed and sworn to
24th day of April

James F. Barnes
Notary Public, State of Wisconsin
My commission expires 12-31-03

This document was drafted by Cooper Engineering Company, Inc., with assistance from the Wisconsin Department
of Natural Resources

ES93226

EXHIBIT A



VILLAGE OF LUCK

0 500 1500 7500

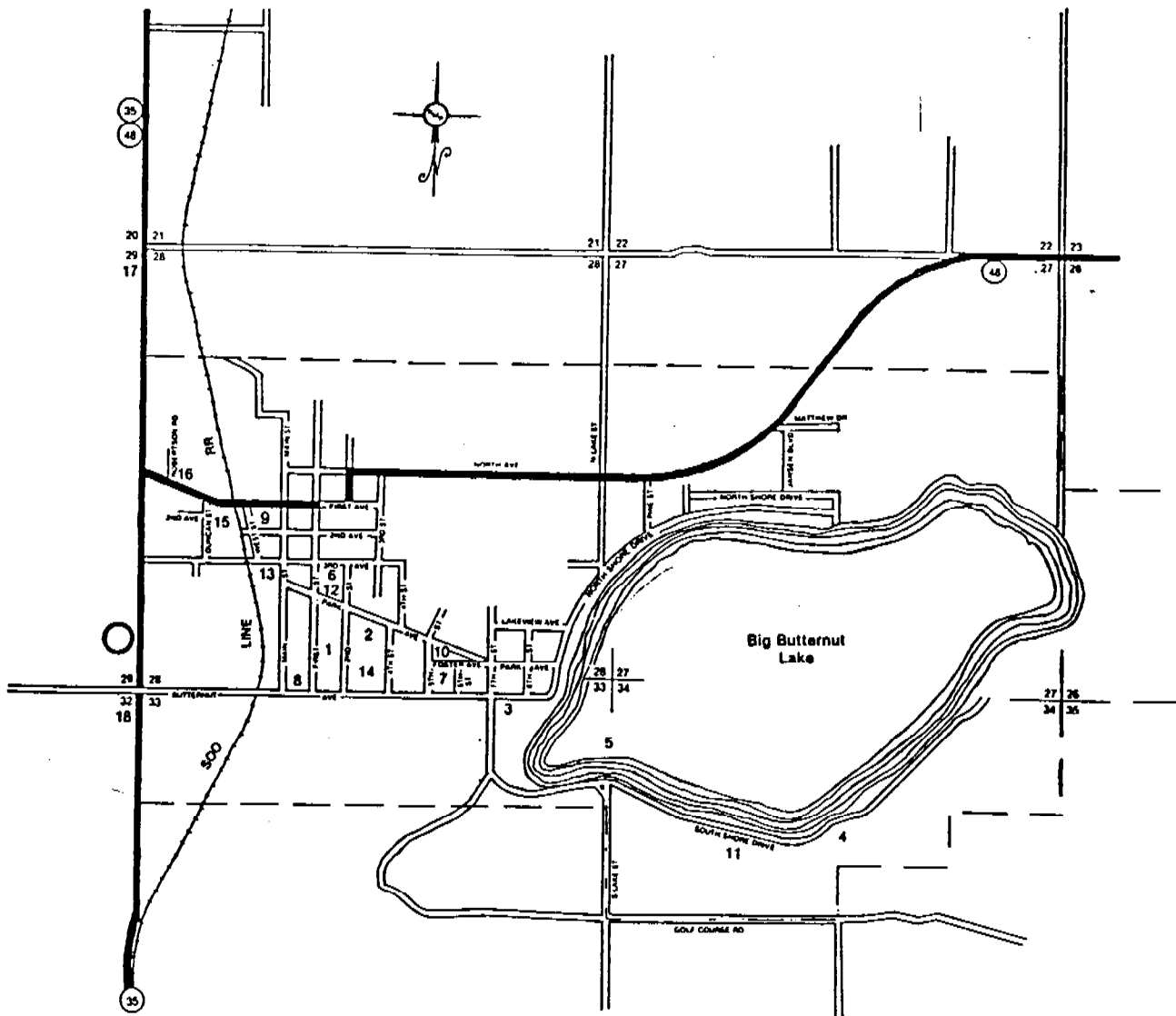
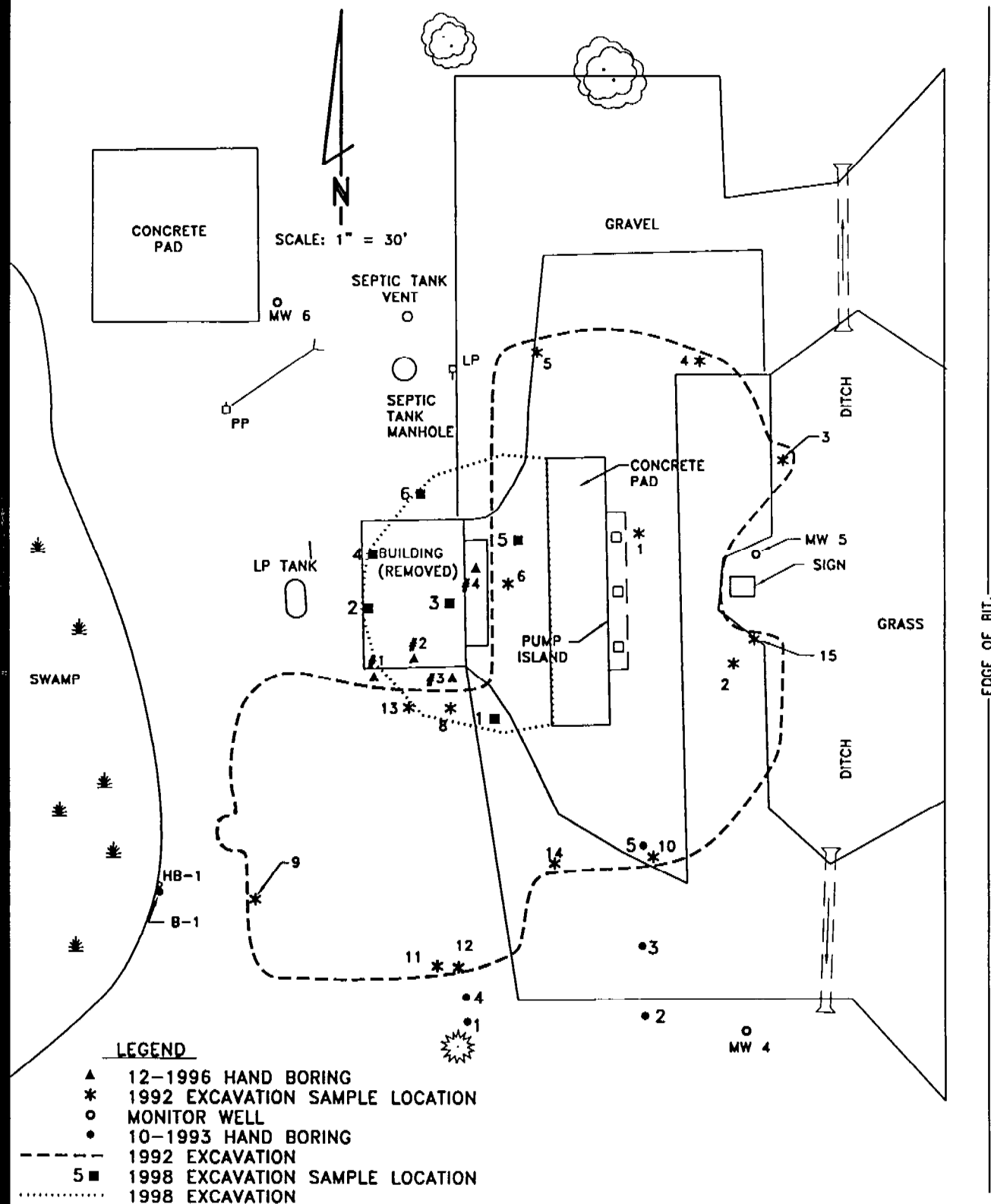


FIGURE 1
SITE LOCATION

TODD'S CONOCO LUCK, WISCONSIN

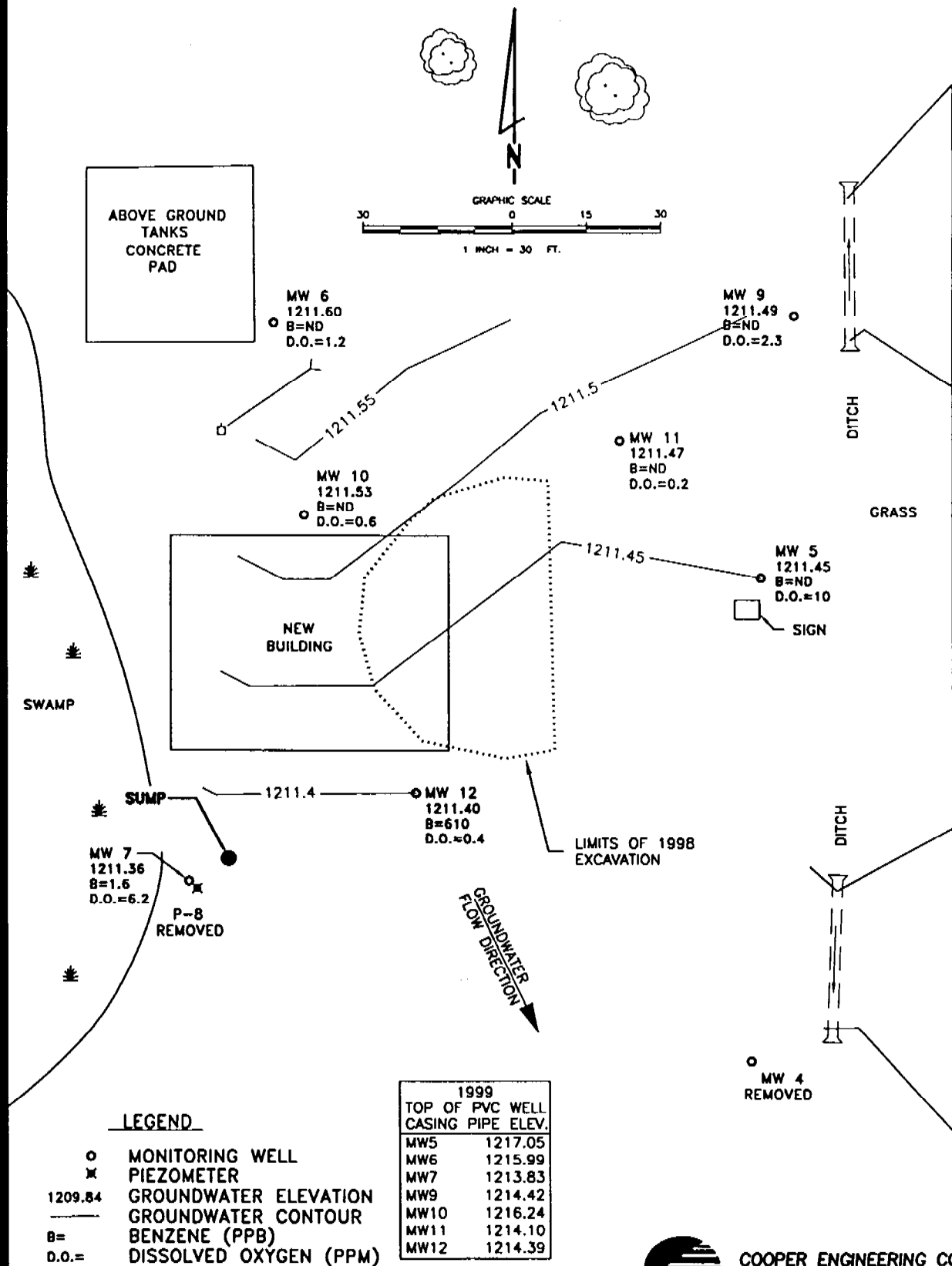


COOPER ENGINEERING COMPANY
 310 WEST SOUTH STREET RICE LAKE, WISCONSIN
 TELEPHONE 715-234-7008
 G:\83-PROJ\83226\TODSCON.DWG 7-29-88 D.A.M.

SITE SKETCH

Figure 4

TODD'S CONOCO LUCK, WISCONSIN



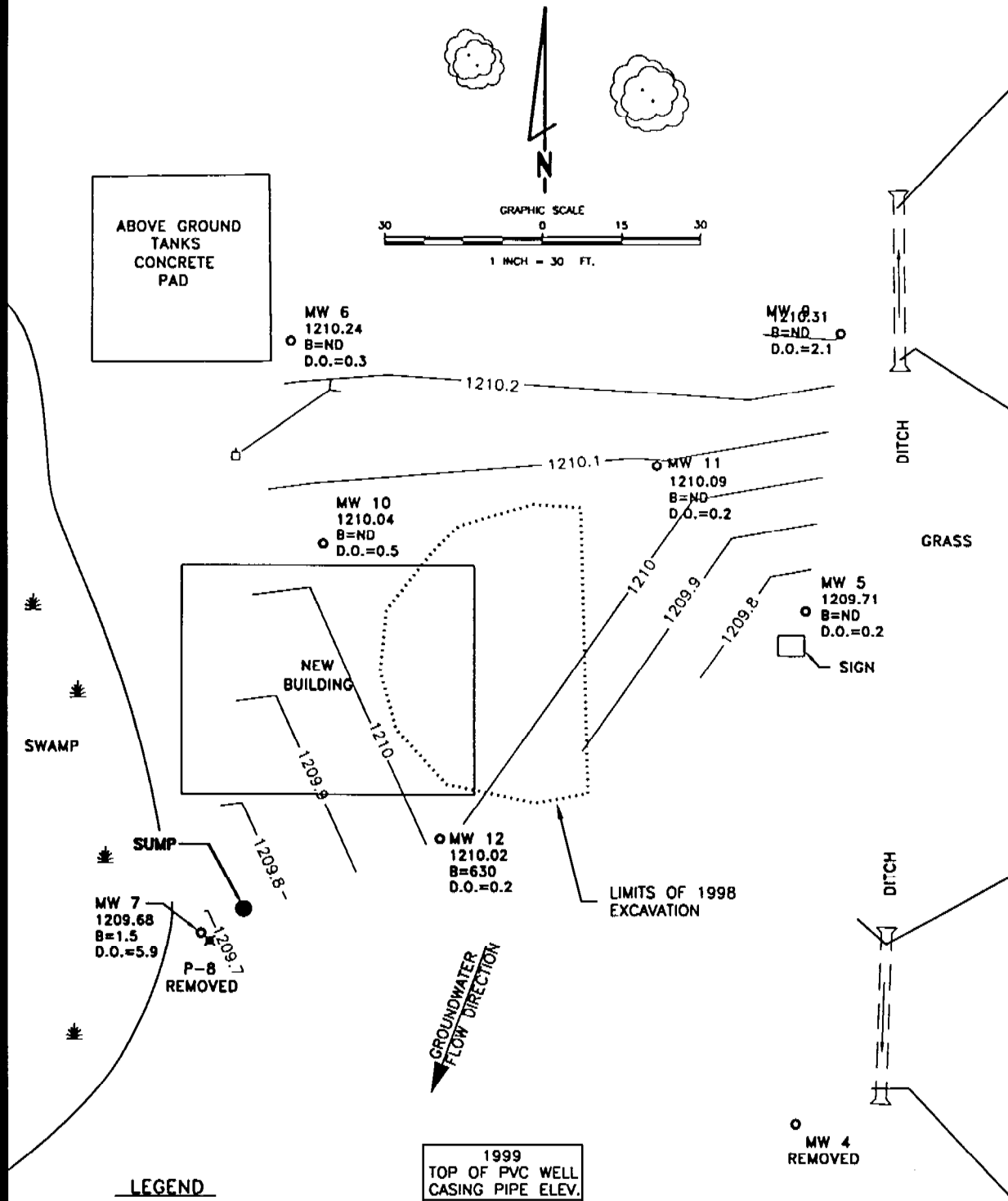
EDGE OF BIT. STH 35



COOPER ENGINEERING COMPANY
 310 WEST SOUTH STREET RICE LAKE, WISCONSIN
 TELEPHONE 715-234-7008
 G:\93226\TODSCONC.DWG 10-29-98 D.A.N.

GROUNDWATER CONTOURS
MAY 11, 1999

TODD'S CONOCO LUCK, WISCONSIN



- LEGEND**
- MONITORING WELL
 - ✕ PIEZOMETER
 - 1209.84 GROUNDWATER ELEVATION
 - GROUNDWATER CONTOUR
 - B= BENZENE (PPB)
 - D.O.= DISSOLVED OXYGEN (PPM)

1999 TOP OF PVC WELL CASING PIPE ELEV.	
MW5	1217.05
MW6	1215.99
MW7	1213.83
MW9	1214.42
MW10	1216.24
MW11	1214.10
MW12	1214.39

COOPER ENGINEERING COMPANY
 310 WEST SOUTH STREET RICE LAKE, WISCONSIN
 TELEPHONE 715-234-7008
 G:\93226\TODSCONC.DWG 10-29-98 D.A.M.

GROUNDWATER CONTOURS
JULY 30, 1998

EDGE OF BIT. STH 35

Table 2
Todd's Conoco
Groundwater Results Summary

MW4										
	6/4/92	12/15/93	4/12/94	6/15/94	10/28/94	2/28/95	5/31/95	10/16/95	PAL	ES
GRO (mg)	nd	nd	nd	nd	damaged not sampled	nd	nd	nd		
DRO (mg)	NA	nd	0.11	nd		nd	nd	nd		
Benzene	nd	nd	nd	nd		nd	nd	nd	0.5	5
Toluene	nd	nd	nd	nd		nd	nd	nd	68.6	343
Ethylbenz	nd	nd	nd	nd		nd	nd	nd	140	700
Total Xyle	nd	nd	nd	nd		nd	nd	nd	124	620
Trimethyl	nd	nd	nd	nd		nd	nd	nd	96	480

MW5																
	6/4/92	12/15/93	4/12/94	6/15/94	10/23/94	2/28/94	5/31/95	10/16/95	1/3/96	4/30/96	7/23/96	10/23/96	7/30/98	5/11/99	PAL	ES
GRO (mg/l)	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.014	nd	nd	nd	<0.021>		
DRO (mg/l)	NA	nd	nd	0.11	0.1	nd	nd	nd	nd	NA	NA	NA	NA	NA		
Benzene	42	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.5	5
Toluene	1.6	nd	nd	nd	0.23*	nd	nd	nd	nd	nd	nd	nd	nd	nd	68.6	343
Ethylbenzene	6.4	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	140	700
Total Xylene	6.5	nd	nd	nd	nd	nd	nd	1.1	nd	nd	nd	nd	nd	nd	124	620
Trimethylbenzenes	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	96	480
tert-Butylmethyl ether	nd	nd	nd	nd	nd	nd	0.55	nd	nd	nd	nd	nd	nd	nd	12	60

MW6																
	6/4/92	12/15/93	4/12/94	6/15/94	10/23/94	2/28/94	5/31/95	10/16/95	1/3/96	4/30/96	7/23/96	10/23/96	7/30/98	5/11/99	PAL	ES
GRO (mg/l)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd		
DRO (mg/l)	NA	nd	0.1	nd	nd	nd	nd	nd	nd	NA	NA	NA	NA	NA		
Benzene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.5	5
Toluene	nd	nd	nd	nd	0.23*	nd	nd	nd	nd	nd	nd	nd	nd	nd	68.6	343
Ethylbenzene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	140	700
Total Xylene	nd	nd	nd	nd	nd	nd	nd	0.48	nd	nd	nd	nd	nd	nd	124	620
Trimethylbenzenes	nd	nd	nd	nd	nd	nd	nd	nd	0.81	nd	nd	nd	nd	nd	96	480

all results in ug/l unless otherwise noted

*toluene detected in the trip blank at 0.22 ug/l

bold values indicate a Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL) exceedance

shaded values indicate a Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES) exceedance

Table 3
Todd's Conoco
Groundwater Results Summary

MW7																
	12/15/93	4/12/94	6/15/94	10/28/94	2/28/94	5/31/95	10/16/95	1/3/96	4/30/96	7/23/96	10/23/96	7/30/98	5/11/99	PAL	ES	
GRO (mg/l)	1.4	0.24	2.9	0.62	2	1.2	0.66	1.9	0.21	0.019	damaged no sample	nd	<0.016>			
DRO (mg/l)	nd	0.67	1.2	NA	0.5	0.4	0.27	0.6	0.25	0.11		<0.23>	nd			
Benzene	540	990	990	140	400	340	150	420	62	8		1.5	<1.6>	0.5	5	
Toluene	18	400	140	11'	180	77	nd	28	12	1.1		nd	nd	68.6	343	
Ethylbenzene	110	210	230	54	150	83	36	140	15	2.6		nd	<1.0>	140	700	
Total Xylene	91	430	399	56	400	166	48	325	26	5.3		nd	nd	124	620	
Trimethylbenzenes	52	77	124	23.5	243	47	nd	98	8.2	2.2	nd	nd	96	480		

P-8															
	12/15/93	4/12/94	6/15/94	10/28/94	2/28/94	5/31/95	10/16/95	1/3/96	4/30/96	7/23/96	10/23/96	7/30/98	5/11/99	PAL	ES
GRO (mg/l)	nd	nd	nd	nd	nd	nd	damaged no sample	nd	nd	nd	nd	nd	abandoned		
DRO (mg/l)	nd	nd	nd	0.1	nd	nd		nd	NA	NA	NA	NA			
Benzene	nd	nd	nd	nd	nd	nd		nd	nd	nd	nd	nd		0.5	5
Toluene	nd	nd	nd	0.27*	nd	nd		0.53	nd	nd	nd	nd		68.6	343
Ethylbenzene	nd	nd	nd	nd	nd	nd		nd	nd	nd	nd	nd		140	700
Total Xylene	nd	nd	nd	nd	nd	nd		nd	nd	nd	nd	nd		124	620
Trimethylbenzenes	nd	nd	nd	nd	nd	nd		nd	nd	nd	nd	nd		96	480

MW9															
	12/15/93	4/12/94	6/15/94	10/28/94	2/28/94	5/31/95	10/16/95	1/3/96	4/30/96	7/23/96	10/23/96	7/30/98	5/11/99	PAL	ES
GRO (mg/l)	nd	frozen	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd		
DRO (mg/l)	0.12		nd	0.11	0.1	nd	nd	nd	0.14	nd	nd	nd	nd		
Benzene	nd		nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.5	5
Toluene	1.9		nd	0.24	nd	nd	nd	nd	nd	nd	nd	nd	nd	68.6	343
Ethylbenzene	nd		nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	140	700
Total Xylene	nd		nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	124	620
Trimethylbenzenes	nd		nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	96	480
tert-butylmethyl ether	nd		nd	nd	nd	0.5	nd	nd	nd	nd	nd	nd	nd	12	60
Chloromethane	nd		nd	nd	nd	1.6	nd	nd	NA	NA	NA	nd	nd	0.3	3
p-Isopropyltoluene	nd	nd	nd	0.027	nd	nd	nd	NA	NA	NA	nd	nd			

all results in ug/l unless otherwise noted

*toluene detected in the trip blank at 0.22 ug/l

bold values indicate a Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL) exceedance

shaded values indicate a Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES) exceedance

Table 4
Todd's Conoco
Groundwater Results Summary

MW10														PAL	ES
	12/15/93	4/12/94	6/15/94	10/28/94	2/28/94	5/31/95	10/16/95	1/3/96	4/30/96	7/23/96	10/23/96	7/30/98	5/11/99		
GRO (mg/l)	nd	nd	nd	nd	nd	nd	0.16	nd	nd	nd	nd	nd	<0.019>		
DRO (mg/l)	0.11	nd	nd	nd	0.11	nd	0.26	nd	nd	nd	nd	NA	NA		
Benzene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.5	5
Toluene	12	nd	nd	0.23'	nd	nd	nd	nd	nd	nd	nd	nd	nd	68.6	343
Ethylbenzene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	140	700
Total Xylene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	124	620
Trimethylbenzenes	0.64	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	96	480
tert-butylmethyl ether	nd	nd	nd	nd	nd	0.51	nd	nd	nd	nd	nd	nd	nd	12	60
Chloromethane	nd	nd	nd	nd	nd	1.1	nd	nd	NA	NA	NA	NA	NA	0.3	3

MW11														PAL	ES
	12/15/93	4/12/94	6/15/94	10/28/94	2/28/94	5/31/95	10/16/95	1/3/96	4/30/96	7/23/96	10/23/96	7/30/98	5/11/99		
GRO (mg/l)	nd	frozen	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	<0.021>		
DRO (mg/l)	nd		nd	0.13	nd	nd	nd	nd	NA	NA	NA	NA	NA		
Benzene	nd		nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.5	5
Toluene	9.4		nd	0.23'	nd	nd	nd	nd	nd	nd	nd	nd	nd	68.6	343
Ethylbenzene	nd		nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	140	700
Total Xylene	nd		nd	nd	nd	0.95	nd	nd	nd	nd	nd	nd	nd	124	620
Trimethylbenzenes	nd		nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	96	480
tert-butylmethyl ether	nd		nd	nd	nd	4.2	nd	nd	nd	nd	nd	nd	nd	12	60

MW12														PAL	ES
	12/15/93	4/12/94	6/15/94	10/28/94	2/28/94	5/31/95	10/16/95	1/3/96	4/30/96	7/23/96	10/23/96	7/30/98	5/11/99		
GRO (mg/l)	13	frozen	1.9	2.5	15	2.3	3.1	17	6.6	2.5	12	4	3.8		
DRO (mg/l)	5.2		2.1	3.7	3.4	2.4	1.5	3.9	3.6	1.4	3.4	2.7	2		
Benzene	900		300	170	15	62	280	5500	1300	220	3700	630	610	0.5	5
Toluene	700		63	66	8.6	15	120	1400	420	63	1200	82	71	68.6	343
Ethylbenzene	820		180	140	6.7	64	220	1000	370	240	900	300	320	140	700
Total Xylene	3680		308	187	20.3	86	330	2930	1040	416	2330	470	480	124	620
Trimethylbenzenes	750		107	127	8.9	51	160	840	490	222	690	249	181	96	480
n-Butylbenzene	NA		NA	NA	0.97	11	23	nd	93	18	83	NA	NA		
sec-Butylbenzene	NA		NA	NA	nd	1.8	nd	nd	nd	nd	nd	NA	NA		
tert-Butylbenzene	NA		NA	NA	nd	nd	nd	nd	180	nd	nd	NA	NA		
Isopropylbenzene	NA		NA	NA	0.48	7.6	22	nd	130	23	61	NA	NA		
Naphthalene	NA		NA	NA	1.5	15	48	nd	170	710	210	NA	NA	8	40
n-Propylbenzene	NA		NA	NA	1	13	nd	nd	38	38	86	NA	NA		
Tetrachloroethene	NA		NA	NA	0.43	nd	nd	nd	nd	nd	nd	NA	NA	0.5	5
Isopropylether	NA		NA	NA	3.3	19	28	200	87	nd	220	NA	NA		

all results in ug/l unless otherwise noted

*toluene detected in the trip blank at 0.22 ug/l

bold values indicate a Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL) exceedance

shaded values indicate a Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES) exceedance

August 5, 1992

RCL = Wisconsin Administrative Code NR720 Residual Contaminant Level
results in mg/kg
'-', parameter not analyzed
shaded values indicate a RCL exceedance

Table 6
Todd's Conoco
Hand Boring Laboratory Analysis
October 21, 1993

	#1	#2	#3	#4	RCL
Total solids, %	79.6	81.7	77.9	78.5	
GRO	<10	<10	<10	<10	100
Benzene	<0.07	<0.06	<0.06	<0.06	0.055
Ethylbenzene	<0.07	<0.06	<0.06	<0.06	2.9
MBTE	<0.7	<0.6	<0.6	<0.6	
Toluene	<0.07	<0.06	<0.06	<0.06	1.5
1,2,4-Trimethylbenzene	<0.07	<0.06	<0.06	<0.06	
1,3,5-Trimethylbenzene	<0.07	<0.06	<0.06	<0.06	
Total Xylene	<0.07	<0.06	<0.06	<0.06	4.1
RCL = Wisconsin Administrative Code NR720 Residual Contaminant Level results in mg/kg shaded areas indicate a RCL exceedance					

Table 7
Todd's Conoco
Excavation Confirmation Sample Summary
July 13 & 14, 1998

	#1 SE wall	#2 SW wall	#3 Center	#4 NW wall	#5 East wall	#6 NW wall	RCL
Depth	7'	6.5'	6.5'	6.5'	6.5'	7'	
Percent solids	94	79.9	91.2	81.5	94	83.3	
DRO (mg/kg)	NA	nd	nd	NA	nd	NA	100
GRO (mg/kg)	nd	nd	nd	nd	nd	nd	100
Lead (mg/kg)	nd	nd	nd	<4.4>	nd	<4.3>	50
MTBE	95*	100*	94*	100*	nd	100*	
Benzene	nd	nd	nd	nd	nd	nd	0.055
Toluene	nd	nd	nd	nd	nd	nd	1.5
Ethylbenzene	nd	nd	nd	nd	nd	nd	2.9
Total Xylene	nd	nd	nd	nd	nd	nd	4.1
1,2,4-Trimethylbenzene	nd	nd	nd	nd	nd	nd	
1,3,5-Trimethylbenzene	nd	nd	nd	nd	nd	nd	

RCL = Wisconsin Administrative Code NR720 Residual Contaminant Level

results in ug/kg unless otherwise noted

Values within brackets are within an region of "Less-Certain Quantitation"

*MTBE found in the trip blank

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Project: Todd's Conoco

Sample Date: April 11, 1999

Project Number: ES93226

Calculated by: Kristina Miller

Well	Temperature (°C)	pH	Dissolved Oxygen (mg/L)	Alkalinity (mg/L)	Sulfate (mg/L)	Iron (mg/L)	Nitrate (mg/L)
MW 7	10.3	6.89	6.2	380	<50	0.6	0
MW 9	9.7	6.60	2.3	420	<50	2.2	0
MW10	11.1	6.87	0.6	480	<50	2.0	1.0
MW12	11.1	6.79	0.4	540	<50	5.0	0

Field analysis of natural attenuation indicator parameters was also performed. Data is summarized in the table above. From data collected at the site we have found that:

- Groundwater temperature at the site is above 5°C, the threshold above which biodegradation is likely to occur (Wiedemeier et al, 2-21).
- Groundwater pH is also within the range of 6 to 8 standard units, the pH range where biodegradation typically occurs (Wiedemeier et al, 2-21).
- Using a mass balance approach, groundwater at the site has the following assimilative capacity:

<u>Electron Acceptor</u>	<u>Potential Mass BTEX Biodegraded (µg/L)*</u>
Dissolved Oxygen	600
Alkalinity	15,600
Iron	140

*calculations are attached

The above calculations of assimilative capacity indicate that electron acceptors are present in concentrations adequate for biodegradation to occur.

- Dissolved oxygen concentration at MW 12 is lower than the background concentration measured at MW 9, indicating that aerobic biodegradation is occurring in that area.
- The alkalinity in the area of highest contamination at MW 12 is higher than the background concentration in MW 9, indicating that biodegradation is occurring.
- Iron concentration in the area of highest contaminant concentration at MW 12 is elevated, indicating that biodegradation is occurring.
- No biodegradation by denitrification.
- No biodegradation by sulfate reduction.

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Assimilative Capacity – Mass Balance Calculations

Electron Acceptor or Metabolic By-product	*Background Concentration (mg/L.) MW 9	**Concentration in Core of Plume (Area with Highest BTEX Concentration) (mg/L.) MW 12
Dissolved Oxygen	2.3	0.4
Nitrate	0	0
Iron (II)	2.2	5.0
Alkalinity	420	540
Sulfate	<50	<50

*denoted with subscript "B"

**denoted with subscript "M"

All calculations are based on a mass balance approach, from Wiedemeier et. al., Technical Protocol for Implementing Intrinsic Remediation with Long-Term Monitoring for Natural Attenuation of Fuel Contamination Dissolved in Groundwater, p. C3-34 - C3-37, Volume I.

- Dissolved Oxygen

The potential mass of Btex biodegraded via respiration of dissolved oxygen:

$$\begin{aligned}\text{BTEX}_{\text{DO}} &= 0.32 (\text{O}_B - \text{O}_M) \\ &= 0.32 (2.3 - 0.4) \\ &= 0.608 \text{ mg/l} \quad \sim \quad 0.6 \text{ mg/l}\end{aligned}$$

- Alkalinity

The mass of BTEX biodegraded to produce an increase in alkalinity:

$$\begin{aligned}\text{BTEX}_A &= 0.13 (\text{A}_M - \text{A}_B) \\ &= 0.13 (540 - 420) \\ &= 15.6 \text{ mg/l} \quad \sim \quad 15.6 \text{ mg/l}\end{aligned}$$

- No biodegradation by denitrification.
- No biodegradation by sulfate reduction.
- Iron

The potential mass of BTEX biodegraded by iron (III) reduction:

$$\begin{aligned}\text{BTEX}_{\text{Fe}} &= 0.05 (\text{Fe}_M - \text{Fe}_B) \\ &= 0.05 (5.0 - 2.2) \\ &= 0.14 \text{ mg/l} \quad \sim \quad 0.14 \text{ mg/l}\end{aligned}$$

Works Cited

Wiedemeier, Todd; Wilson, John T.; Kampbell, Donald H.; Miller, Ross N.; Hansen, Jerry E., 1995, *Technical Protocol for Implementing Intrinsic Remediation with Long-Term Monitoring for Natural Attenuation of Fuel Contamination Dissolved in Groundwater*, Vol. 1, Air Force Center for Environmental Excellence Technology Transfer Division.

TODD'S CONOCO-EQUITY COOPERATIVE
PREREMEDIAL GEOLOGIC CROSS SECTION

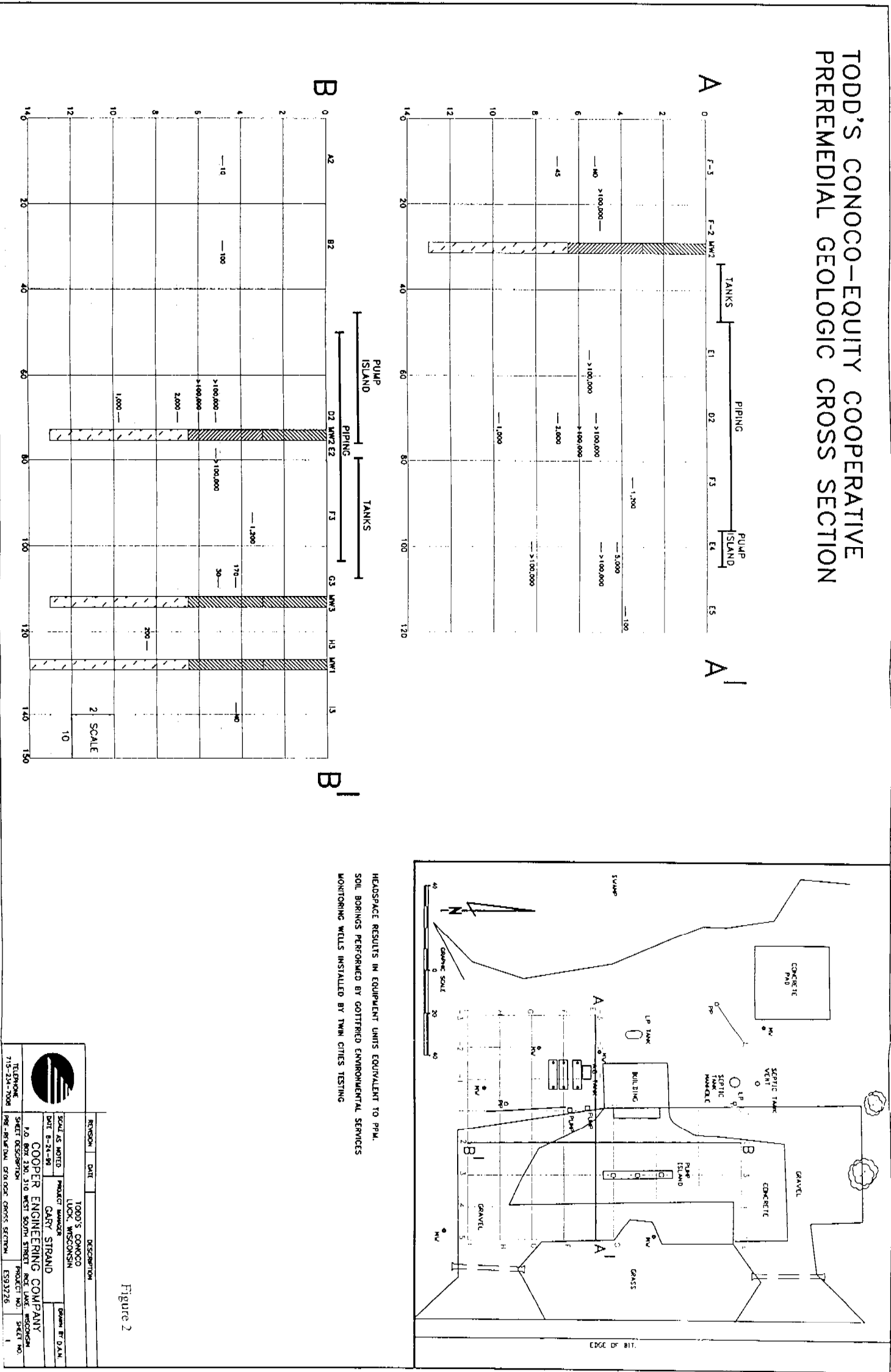


Figure 2

HEADSPACE RESULTS IN EQUIPMENT UNITS EQUIVALENT TO PPM.
SOIL BORINGS PERFORMED BY GOTTFRID ENVIRONMENTAL SERVICES
MONITORING WELLS INSTALLED BY TWIN CITIES TESTING

REVISION	DATE	DESCRIPTION
1	8-24-99	TODD'S CONOCO LUCK, WISCONSIN
2	8-24-99	SCALE AS NOTED PROJECT MANAGER GARY STRAND COOPER ENGINEERING COMPANY P.O. BOX 230, 210 WEST SOUTH STREET RICE LAKE, WISCONSIN PROJECT NO. ES93226 SHEET NO. 1